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# *The Conservative Use of Modern Household Technology*

CHARLES A. THRALL

Modern technology is pervasive in everyday life in North America. Any doubts about its importance in giving qualities of immediacy, flexibility, and physical comfort to contemporary life are quickly stilled by spending even a weekend in a country house which lacks electricity and running water. However, obvious as the impact of modern household technology is on ordinary activities pertinent to cooking, cleaning, controlling the environment, and personal hygiene, its sociological impact is more difficult to assess.

The popular notion is that modern appliances save time and that this saving of time has caused the increased participation of women in the labor force, diminished the importance of chores for children, and played a major role in the great reduction in the number of household servants. Any possible impact on the division of labor between husbands and wives is not often mentioned. The forms of the household equipment itself are almost always taken as given, in keeping with the common tendency to regard technological change as basically exogenous.

In contrast to popular impressions, historical and sociological studies of household equipment call into question the timesaving effect and show that the most important developments in technology considerably antedated the turning point in women's labor-force participation. They also indicate a rather more complex relationship between technological developments and the roles of children and domestic help and suggest that the impact on the family division of labor may well be to reinforce traditional role assignments. Likewise it appears clear that modern household equipment is designed and

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marketed to reinforce rather than to challenge the household-family pattern of contemporary North American society.

In reality, technology and technological change are not exogenous, not determined by some internal dynamic of their own; rather, they can only be understood in their sociocultural context. The thesis of this article is that in the case of household equipment, modern technology has tended to support, perhaps even to reinforce, existing social arrangements.

Gerhard Lenski has argued that the more advanced a society's technology, the wider the range of choices available to that society and hence the more opportunity there is to make the choices on non-technological grounds.<sup>1</sup> When new technology allows a fuller expression of existing values, the resulting behavioral changes will often (but not always) appear to be conservative. Thus Manning Nash found that when a textile mill was located in an isolated peasant village, the millworkers were more regular than other villagers in observing certain traditional religious ceremonies because they were better able to afford the cost.<sup>2</sup>

Seymour Melman points out that there is no such thing as "a machine" in the abstract.<sup>3</sup> Any specific machine (or any human artifact, for that matter) is the result of nontechnological as well as technological considerations. Melman argues that there are always technological alternatives and that the choice among them must be made on non-technological grounds. These grounds are perhaps most often economic, but they are also social, cultural, and political. Thus a society's choices among alternative technologies and among various possible directions of technological development are highly reflective of the patterns of political, social, and economic power in that society.

The contemporary American family has taken form as part of the process of capitalist industrialization. Even scholars who differ sharply in their evaluation of this process agree on its main features, among them the increased emphasis on the nuclear family household and the drastic decrease in the role of the household as a producer for the market.<sup>4</sup> In recent years economists, as part of what is often called

<sup>1</sup>Gerhard Lenski, *Human Societies* (New York, 1970), pp. 116–17.

<sup>2</sup>Manning Nash, *Machine Age Maya: The Industrialization of a Guatemalan Community* (Chicago, 1967), pp. 83–87.

<sup>3</sup>Seymour Melman, "Symposium on Technology and Authority," in *Technology, Power, and Social Change*, ed. C. A. Thrall and J. M. Starr (Lexington, Mass., 1972), pp. 49–54.

<sup>4</sup>See, e.g., Barbara Ehrenreich and Deirdre English, "The Manufacture of Householdwork," *Socialist Revolution* 26 (October–December 1975): 5–40; Ann Oakley, *Women's Work: The Housewife Past and Present* (New York, 1974); Talcott Parsons, "Age and Sex in the Social Structure of the United States," *American Sociological Review* 7 (October 1942): 604–16.

the "new home economics," have taken the lead in viewing the family as a small factory where many important consumption goods are still produced. They have tried to analyze household production and its interaction with nonhousehold economic activities using the same techniques that are used in the nonhousehold areas.<sup>5</sup> However, for the most part the new home economists have not made use of the models of the family division of labor developed by sociologists, nor are many sociologists aware of their work.

Technology is a part of any production function, and economists working in the tradition mentioned above often make passing reference to household equipment. Still, I am not aware of any instances where they have tried to build and test a model which explicitly takes into account particular forms of equipment and the allocation of labor inputs within the family. From a sociological perspective, household technology is an important subject for investigation both because popular opinion ascribes it such a large role and because of the importance of the relationship between technology and society in general.

Sociological models of the division of labor within families have not focused on the role of household technology, and theoretically one would not expect household technology to be the dominant factor affecting the family division of labor. The aim of this article is to establish household technology as an additional variable among the existing approaches to analyzing the household division of labor. It will review evidence on the timesaving capability of household equipment and its relationship to women's employment and to domestic help, and it will also present data from an empirical study of the relationship between household equipment and the division of labor in families, including children's chores. The data, both with regard to time and the division of labor, show modern household equipment being used in ways consistent with the maintenance of sex-linked roles in household families.

### *The Study of Modern Household Equipment*

It is much easier to assert that modern household equipment "makes a difference" than it is to specify what the difference is. At the physical level, differences are fairly obvious. Modern equipment almost always makes a difference in the motions involved in performing a particular household task. Usually it affects the degree of physical effort, the requisite skills and knowledge, and the duration of

<sup>5</sup>Gary S. Becker, "A Theory of the Allocation of Time," *Economic Journal* 75 (September 1965): 493-517; Richard F. Muth, "Household Production and Consumer Demand Functions," *Econometrica* 34 (July 1966): 699-708; Theodore W. Schultz, ed., *Economics of the Family: Marriage, Children, and Human Capital* (Chicago, 1974).

attention to the task. The effect of modern technology can be to improve the quality of outcome of a task, to eliminate a task entirely, or to create a new one.

At the social level it is much more difficult to assess the impact of modern household equipment. A major consideration is that the most important items of equipment are now virtually universal in North America; many of them have been for some time. These include electric lights, gas or electric ranges and refrigerators, hot and cold running water, and automatic heat.<sup>6</sup> Those few North American families which do lack these basics are almost certain to be unusual in other ways as well: very low income, or residents of extremely isolated areas, or religiously or ideologically opposed to modern technology. Many of the items of equipment which are not universal are highly visible symbols of mid-20th-century technology: dishwashers, garbage disposals, and clothes dryers, not to mention electric frying pans, blenders, and carving knives. However, they are much more limited in their possible impact than are electric lights and gas ranges.

There is no satisfactory solution to the problem of limited variation of important household equipment in otherwise comparable families. The approach adopted in the research being reported here was this: the results of a careful examination of the relationship between equipment and performance for a list of tasks where possession of the relevant equipment is not universal were combined with more general questioning of respondents about differences in the family division of labor—now and when today's adults were children—and about the family's overall feeling and impressions concerning the impact of modern household equipment on their lives.<sup>7</sup> In order to measure

<sup>6</sup>Good summary reviews of the development of modern household equipment can be found in Ruth Schwartz Cowan, "The 'Industrial Revolution' in the Home: Household Technology and Social Change in the 20th Century," *Technology and Culture* 17 (January 1976): 1–23; and Joann Vanek, "Household Technology and Social Status: Rising Living Standards and Status and Residence Differences in Housework," *Technology and Culture* 19 (July 1978): 361–75 (hereafter cited as "Household Technology").

<sup>7</sup>The data being presented here were collected as part of a larger study of the division of labor in families. While interest in the role of modern household equipment was the point of departure for the study, the project also investigated other aspects of the family division of labor. These aspects and the detailed research design are reported elsewhere (Charles A. Thrall, "Household Technology and the Division of Labor in Families" [Ph.D. diss., Harvard University, 1970], and "Who Does What: Role Stereotypy, Children's Work, and Continuity between Generations in the Household Division of Labor," *Human Relations* 31 [March 1978]: 249–65 [hereafter cited as "Who Does What"]]). The present account is focused specifically on the role of household equipment; descriptions of the research design and other variables are deliberately minimized.

household division of labor in a way which builds on prior studies, questions were also asked about the basic tasks addressed in those studies. In some cases this meant that there was either no household equipment associated with the task or there was equipment which virtually everyone does possess. The analysis was carried out at the aggregate level, as an investigation of relationships between overall measures of equipment possession and task performance as well as at the level of individual equipment-task combinations. As will be described later, the individual level produced the more interesting results.

This investigation was focused on the relationship between modern household equipment and family division of labor, but it also included attention to the use of time and to women's employment. A detailed discussion of the division of labor will follow presentation of the research design and discussions of time use, women's employment, and the use of paid domestic help.

### *Research Design*

Husband and wife in ninety-nine families living in a Boston suburb were interviewed together. Because of the interest in the kinds of work often done around the house by men, the sample was limited to families living in houses with yards and walks or driveways. Because of particular interest in chores done by children and lack of specific interest in child care, the sample was further limited to families with two to four school-age children and none older or younger.<sup>8</sup>

The interviews were structured with a schedule of roughly 165 items, most of which called for a one- or two-word answer but some of which were open ended. They lasted from forty minutes to two and one-half hours with an average of one and one-quarter hour. The interview included questions about family background (occupation,

<sup>8</sup>Final sampling requirements were that no one else live in the house and that the family not have more than ten hours a week of paid help in the house or in the yard. The sample was selected through a multistage procedure which began with the identification in the town directory of married couples between the ages of thirty and fifty. Using a randomly determined sequence of contact, these couples were first sent a screening questionnaire which asked about the number and ages of their children and were then telephoned to get their responses to it. An attempt was made to schedule interviews with all the couples whose answers indicated that they met the sampling requirements. Eight percent of the families contacted refused to give enough information to determine whether they met the requirements and an additional 20 percent of those who did refused to be interviewed. The refusal rate was increased by the requirement that both the husband and the wife agree to be interviewed.

education, income, religion), use of time, the perceived basis of the division of labor in the family, attitudes toward children's chores and toward household equipment, and the division of labor in the previous generation. It also included specific records of performance of twenty-five common household chores and a household equipment inventory covering twenty-six items.

The requirement in the research design that the families studied be intact and be house dwellers with the husband in his prime earning years resulted, not surprisingly, in a sample which was generally middle class with above-average income. Although there was substantial variation within the group on measures of education, occupation, and income, the typical family in the study had a husband with four years of college and a white-collar occupation, a wife with some college who did not work outside the home, and a 1967 family income in the \$12,500–\$15,000 range.

#### *Household Equipment and the Use of Time*

When asked if modern household equipment saves time, most people say yes without hesitation; 91 percent of the respondents in this study did so. Yet research in this area indicates that the answer is not nearly so obvious. Indeed it is not at all clear what the question should be. For example, an engineer might start by asking how much time it takes to accomplish a specified amount of work—pounds of laundry or place settings of dishes washed—with and without modern equipment. I am not aware of any research of this type in the sociological literature. Even without its being substantiated by careful empirical research, however, it is at this level of the “time it takes to do a given amount of work” that social scientists and their respondents alike appear to agree that at least some items of modern equipment can save time. It is also true that discussions of the timesaving capability of modern household technology often have as their implicit standard of comparison the urban home of the late 19th century or the farm home of the early 20th. These homes typically lacked all of the basic items of modern technology. Empirical studies, however, are generally restricted to the analysis of far more limited degrees of variation in household equipment.

The question that has been asked in time-budget studies by sociologists and home economists is whether modern household equipment affects the amount of time actually spent on particular tasks. Joann Vanek summarizes her review of this literature by saying that there is evidence for only a negligible reduction in time spent on specific tasks when modern equipment is used, but this lack of timesaving may well mask an increase in the quality or quantity of the



work or both.<sup>9</sup> This is a point which has been made before both by social scientists<sup>10</sup> and in the popular literature.<sup>11</sup>

The relationship between household equipment and the use of time can be investigated at the aggregate level as well as task by task, and the project being reported here did not examine use of time at the task level. Rather, the respondents were asked to estimate average weekly time expenditure in ordinary work around the house for themselves and their children. In spite of the general perception of equipment as timesaving, at the aggregate level there was no significant relationship between extensiveness of household equipment and the estimated amount of time spent in work around the house by any member of the family. I did find, in common with Vanek and with other time-budget studies,<sup>12</sup> that women who work outside the home spend less time on housework than those who do not. However, the reduction in hours of housework is less than the amount of time spent by working women in connection with their employment—ten hours compared with twenty-four; thus these women have, on the average, an extra fourteen hours in their “total” workweek. The husbands and children of the employed women reported an average of four more hours per week of housework than those of nonemployed women. This leaves these families with a net reduction of six hours a week of work around the house. It also means that employed women have a larger share of the family total of work of all kinds than do nonemployed women.

All pertinent research appears to agree that the total workweek of employed women, combining housework time and time on the job, is significantly longer on the average than that of employed men. Studies have differed, however, on whether the husbands of employed women spend any more time at all on housework than the husbands of nonemployed women. Vanek has recently summarized a number of these studies and suggested that the differences may be an artifact of the different research methods used.<sup>13</sup> She noted that

<sup>9</sup>Joann Vanek, “Keeping Busy: Time Spent in Housework, United States, 1920–1970” (Ph.D. diss., University of Michigan, 1973), pp. 127–28 (hereafter cited as “Keeping Busy”).

<sup>10</sup>James N. Morgan, I. A. Siregledin, and N. Baerwaldt, *Productive Americans* (Ann Arbor, 1966), pp. 111–12; M. F. Nimkoff, “What Do Modern Inventions Do to Family Life?” *Annals of the American Academy of Political and Social Science* 272 (November 1950): 53–58.

<sup>11</sup>Betty Friedan, *The Feminine Mystique* (New York, 1963), pp. 224–46.

<sup>12</sup>Morgan et al., pp. 120–21; Alexander Szalai, ed., *The Use of Time: Daily Activities of Urban and Suburban Populations in Twelve Countries* (The Hague, 1972).

<sup>13</sup>Joann Vanek, “Housewives as Workers,” in *Women Working: Theories and Facts in Perspective*, ed. Ann H. Stromberg and Shirley Harkness (Palo Alto, Calif., 1978), p. 407.



studies which found more help from the husbands of working women had asked about performance of relatively small numbers of particular tasks, while the studies (including her own) which had not found more participation by husbands of working women had looked at the overall amount of time reported as spent on housework. Thus my finding that the husbands of working women report more total time spent in housework than those of nonemployed women is of interest because it does not fit within Vanek's suggested reconciliation.<sup>14</sup>

The sociologically important question to which Vanek, Morgan, Nimkoff, and Friedan were addressing themselves is, If modern household equipment does have any timesaving potential, why is that potential not actually realized? Vanek's overall conclusions are consistent with the partial or more impressionistic conclusions of the previous authors as well as with those of my own study.<sup>15</sup> Briefly, she shows that the total time spent in housework and closely related activities such as child care was almost constant for nonemployed urban housewives in the United States between 1920 and 1970. At present employed women do spend considerably less time in housework than do nonemployed women, and during this time there has been a dramatic increase in the proportion of women who are employed outside the home. There has also been a great decrease, both absolutely and relatively, in the number of farmwives. This is of interest because they have traditionally performed tasks connected with the farm in addition to the housekeeping responsibilities shared with wives who do not live on farms.

Vanek's explanation for the failure of nonemployed urban housewives—who are still a numerically and socially important part of the population—to take advantage of any timesaving potential of modern household equipment is in terms of family role dynamics which require the wife to appear to make the same contribution to the family regarding productive use of time as does the husband. In the farm family, which predominated in the United States prior to the early part of this century, the wife, lacking any modern equipment and burdened as well with a share of the farm chores, found her time quite fully occupied. Elimination of farm chores for most women and the introduction of modern household equipment posed a potential threat to the perceived equality of the husband's and wife's contributions to the maintenance of the family.

While Vanek does not prove this explanation, it is consistent with

<sup>14</sup>However, consistent with Vanek's literature review, I found that in addition to reporting more overall time spent on housework, the husbands of working women also reported taking part in significantly more of the tasks on a list of specified tasks.

<sup>15</sup>Vanek, "Keeping Busy," pp. 188–93.

her data. Although she is not able to tie the explanation to the impact of specific items of equipment, by putting together the results of fifteen studies from 1924 to 1968, she is able to show that there has been a shift in the internal allocation of the housewife's time. Less time is spent now on food preparation and home care and more on family care and home management.<sup>16</sup> This is a further suggestion that the potential timesaving ability of modern equipment is countered by social pressures to keep homemaking a full-time job for nonemployed women. Indeed, with the decline in the frequency of household servants and the decrease in the number of farm households, the division between urban wives who are or are not employed outside the home is now probably the most important source of variation in both the total amount and the internal allocation of women's housework time.<sup>17</sup>

### *Household Equipment and Women's Employment*

Vanek's evidence that employed women spend less time in housework might well appear to uphold the interpretation that improvements in equipment have been a direct cause of increased employment of women outside the home. However, more detailed examination of the timing of the widespread introduction of the most significant items of modern equipment and of the major turning point in women's labor-force participation shows that the relationship is not that simple. The most important types of household equipment were already in general use by the end of the first third of this century, especially in urban areas.<sup>18</sup> Valerie Oppenheimer has argued that the sharp increase in women's employment did not come until after 1940.<sup>19</sup> She maintains, therefore, that reduction, or more properly, the potential for reduction, of the time burden of housekeeping may have been a necessary condition for the increase in women's employment but that it clearly was not a sufficient condition.<sup>20</sup> Many women with the same complement of modern equipment as employed women have continued to make homemaking a full-time job,

<sup>16</sup>Ibid., pp. 93–115.

<sup>17</sup>Using different kinds of data, Vanek and I have both argued that there is less variation by social class in patterns of housework and household division of labor now than in the past. Vanek, "Household Technology"; Thrall, "Who Does What," pp. 262–63.

<sup>18</sup>Siegfried Giedion, *Mechanization Takes Command* (New York, 1948), pp. 512–606.

<sup>19</sup>Valerie Kincade Oppenheimer, *The Female Labor Force in the United States* (Berkeley, 1970).

<sup>20</sup>Some sociologists have questioned Oppenheimer's data and her interpretation of them, but these critiques do not challenge her analysis of the role of household equipment.

spending, as Vanek showed,<sup>21</sup> an average of eighteen hours a week more on it than employed women, even after Vanek controlled for differences in the family compositions of the two groups. Among the families I studied, those in which the wife was employed actually had less equipment than those in which she was not.<sup>22</sup>

While it is entirely possible that modern household equipment may have played a facilitating role in women's employment within the context of American culture, there are other largely industrial societies (the Soviet Union being a conspicuous example) where the labor-force participation rate of women is higher than that in the United States but where modern appliances are much less available.

### *Household Equipment and Paid Domestic Help*

In his book *Mechanization Takes Command*, Siegfried Giedion began the section on mechanization of the household with a discussion of the attempts from the middle of the 19th century on to rationalize housekeeping.<sup>23</sup> He claims that much of the initial impetus for this came from individuals like Catherine E. Beecher. One of Beecher's points was that domestic service is inconsistent with American democratic ideals. Thus an important rationale for improving the efficiency of the homemaker was to minimize, if not actually eliminate, the need for paid domestic help. Beecher was also concerned about the status of women in general. She felt that failure to give housekeeping the same attention and the same status as a school subject such as business and manufacturing were then beginning to receive would be an insult to women and a detriment to their social position.

Beecher's concern with reducing the necessity for domestic help was perpetuated by others. However, a careful reading of Giedion's examples shows a change in emphasis from Beecher's concern (still clearly reflected by Christine Frederick in 1912) with making it possible for ideological reasons for middle-class homes to operate without servants toward an increasing concern after World War I with ways of responding to the decreasing availability of domestic help.

The efforts to rationalize the organization of housekeeping, even before major changes in household equipment had occurred, as well as the subsequent improvement in equipment have without doubt made it easier for families of all social classes to do all of their own

<sup>21</sup>Vanek, "Keeping Busy," p. 192.

<sup>22</sup>With the rapid increases in recent years in both the scholarly study of issues relating to women and the number of women working outside the home has come a corresponding increase in the study of housework and its relationship to other phenomena (see, e.g., Sarah Fenstermaker Berk, ed., *Women and Household Labor*, Sage Yearbook in Women's Policy Studies [Beverly Hills, 1980]).

<sup>23</sup>Giedion, pp. 512-627.

housekeeping. Ruth Cowan has suggested that advertising in magazines directed at middle-class women in the 1920s may have played an important role in encouraging women to acquire appliances which would, according to the advertisements, allow them to do without a maid and at the same time personally provide even better care for their families.<sup>24</sup> However, neither the ideological reformers nor the appliance advertisers of the 1920s were completely successful. A number of my respondents spontaneously said that they would gladly trade all of their appliances for a good maid; only one said that an advantage of modern equipment was that it enabled one to do without paid help.

Further evidence that modern equipment may be a necessary condition for reduction in domestic help but not a sufficient one is found by examining the relationship between regional income levels and the proportion of private household workers in the labor force. Within any single labor market there is no doubt a positive relationship between income and employment of domestic help. However, across labor markets, the proportion of private household workers is inversely related to local income levels. Thus in 1969 the state with the highest proportion of private household workers in its labor force and also the lowest median family income was Mississippi. The Spearman rank correlation between proportion of private household workers and the median family income in each state in 1969 was a very strong  $-.76$ .<sup>25</sup> In a regression which included the wife's income level and the county wage level, Bruce Gardner reported a similar result by counties within the state of North Carolina.<sup>26</sup> The rate of employment of household help appears to be a function of alternative employment opportunities for low-skilled individuals. If few other opportunities are available, household help will be available, inexpensive, and employed widely regardless of how much or how little modern household equipment the employers have. If other opportunities are available, household help will be less available, more expensive, and more likely to be displaced by modern household equipment.<sup>27</sup>

<sup>24</sup>Cowan (n. 6 above), pp. 20–22.

<sup>25</sup>Calculated from U.S. Bureau of the Census, *U.S. Census of Population: 1970*, Summary Volume PC(1)-D1 (Washington, D.C.: Government Printing Office, 1970), table 345 (family income), and Volume PC(1)-D2, table 167 (proportion of employed persons who are private household workers).

<sup>26</sup>Bruce Gardner, "Economics of the Size of North Carolina Rural Families," in Schultz, ed. (n. 5 above), pp. 160–83.

<sup>27</sup>The argument that the availability of the domestic help depends more directly on the alternatives available to the potential domestic workers than on the availability of household equipment or the affluence of the potential employers is strengthened by evidence that when available, factory work has been preferred over domestic work even when it paid less (David W. Katzman, *Seven Days a Week: Women and Domestic Work in Industrializing America* [New York, 1978]).

A footnote to the discussion of the relationship between household technology and paid domestic help is that more than a third of the families I interviewed who felt that equipment had affected their division of labor said that the result was that the wife received less help from the husband and children. No family said that the result was that the husband received less help from the wife. Above and beyond any actual labor-saving effect, household technology is being used in these families to rationalize the specialized position of the woman as the family's household worker, especially in the absence of any paid domestic help.

### *Household Equipment and the Family Division of Labor*

This article began by citing a number of commonly assumed effects of modern household equipment: saving of time, increase in the employment of women outside the home, decrease in the prevalence of paid domestic help. We have seen that even the demonstration of relationships to household equipment in these areas is subject to careful qualifications. Those relationships which do exist seem to be supportive of the established family roles of industrial society. This can be further illustrated by the results of my own study of household technology and the division of labor in families.

There are two studies of the household division of labor which stand out from all others in their influence on subsequent work in this area: *Family and Social Network* by Elizabeth Bott and *Husbands and Wives* by Robert Blood and Donald Wolfe.<sup>28</sup> The measures of division of labor used in my study were adapted from those introduced by these scholars.

When we ask if there is a relationship between household equipment and the division of labor, we are asking if there is a relationship either between overall possession of equipment and the overall pattern of the division of labor, or between possession of specific items of equipment and the pattern of performance of directly related tasks. Before asking such questions, however, we should review the equipment inventory and task-performance record used in this project.

All of the families in the study had electric service; automatic oil, gas, or electric heat; hot and cold running water, mechanical refrigeration, and at least one car. These "universals" were not included on the formal equipment inventory for just that reason. Table 1 lists the twenty-six items which constitute the equipment inventory and the percentage of families in the study having each item. The

<sup>28</sup>Elizabeth Bott, *Family and Social Network*, 2d ed. (New York, 1971) (originally published 1957); Robert O. Blood, Jr., and Donald M. Wolfe, *Husbands and Wives: The Dynamics of Married Living* (New York, 1960).

attempt was made to include all the major appliances which are related, however tenuously, to the performance of some specific task and manageable numbers of smaller appliances which are also related to specific tasks, along with items which, though not used for any of the tasks studied, contribute to the assessment of the family's stock of equipment and its apparent degree of "equipment mindedness." Families ranged from six to twenty-four in the number of these items they possessed, with a mean of 15.6.

Table 2 lists the twenty-five tasks included in the task-performance record. Fifteen of these tasks are associated at least indirectly with one or more specific items of household equipment included on the equipment inventory. The remaining ten tasks supplement the equipment-related tasks to make the list more broadly representative of work around the house and to include tasks previously studied by Bott and by Blood and Wolfe.

Respondents were asked the percentage of the time that each person who ever took part in a particular task did so. If two or more

TABLE 1  
HOUSEHOLD EQUIPMENT INVENTORY WITH PERCENTAGE OF FAMILIES  
POSSESSING EACH ITEM

Item	Families (%)
Vacuum cleaner .....	100
Television .....	99
Washing machine .....	97
Electric mixer .....	95
Sewing machine .....	86
Power lawn mower .....	80
Oven timer .....	79
Clothes dryer .....	77
Dishwasher .....	73
Electric grill or waffle iron .....	73
Garbage disposal .....	71
Electric frying pan .....	71
Freezer .....	70
Power tools .....	69
Combination screens and storm windows .....	66
Electric can opener .....	63
Electric blender .....	62
Electric toothbrush .....	56
Electric carving knife .....	48
Electric floor polisher .....	43
Air conditioner .....	24
Snowplow .....	24
Rug shampoo machine .....	19
Electric shoe polisher .....	12
Indoor incinerator .....	5
Automatic oven cleaner .....	5

people ever worked together on a task, the total for that task would then exceed 100 percent. For example, in a given family the wife might take part in washing the supper dishes 65 percent of the time, the children 40 percent, and the husband 10 percent, for a total of 115 percent. On the other hand, the husband might be the only one ever to take trash to the town dump, giving him a score for that task of 100 percent. These raw percentages were then used as the basis for calculating measures of the division of labor modeled on those of Blood and Wolfe but modified to include children and helpers from outside the family.<sup>29</sup>

TABLE 2  
TASKS INCLUDED IN THE TASK-PERFORMANCE RECORD AND THEIR USE  
IN PREVIOUS RESEARCH

TASK	PREVIOUSLY USED BY	
	Bott	Blood and Wolfe
Sets the table for dinner . . . . .	X	...
Clears the table . . . . .	...	...
Disposes of garbage . . . . .	...	...
Washes and dries dishes in the evening . . .	X	X
Washes and dries dishes after breakfast or lunch . . . . .	X	...
Empties wastebaskets . . . . .	...	...
Takes trash to the dump . . . . .	...	...
Fixes husband's weekday breakfast . . . . .	...	X
Does grocery shopping . . . . .	X	X
Puts groceries away . . . . .	...	...
Straightens up the living room for company . . . . .	...	X
Vacuums . . . . .	X	...
Washes floors . . . . .	...	...
Polishes floors . . . . .	...	...
Does laundry . . . . .	X	...
Irons . . . . .	X	...
Mends and sews . . . . .	...	...
Cleans the oven . . . . .	...	...
Mows the lawn . . . . .	...	X
Does yard work other than mowing . . . . .	...	...
Shovels snow . . . . .	...	X
Sees that routine car maintenance is done . . . . .	...	...
Changes light bulbs . . . . .	...	...
Fixes things around the house . . . . .	X	X
Puts up screens and storm windows . . . . .	...	...

<sup>29</sup>To measure the division of labor between husband and wife, Blood and Wolfe used a five-point scale in which each *task* was scored 1 if the husband always did it, 5 if the wife always did it, 3 if they did it equally, and so forth. This model has been widely copied. In order to include children, I devised a measure which shows for each *individual* elements of both the extent of participation and its standing relative to others. Thus



The two measures of the division of labor important to us are those of specialization and stereotypy. *Specialization* (which corresponds to Bott's segregated role relationship) means that a task is done exclusively by one person. My definition is the same as Blood and Wolfe's. *Stereotypy* is the adherence to socially expected roles. In measuring it, most previous studies, including Blood and Wolfe's, have assumed that if a task is stereotyped as belonging to one family member, others are then expected not to do it. They have also decided in advance which tasks should be stereotyped as belonging to which individuals. Including children and a larger number of tasks forced me to reconsider these assumptions. In this study stereotypy is defined separately for each combination of family member and task. With three categories of family member (husband, wife, children) and twenty-five tasks there are seventy-five combinations of person and task. For sixty of these there was a clear pattern: the person in question either did it or did not. In fifteen cases the pattern was not clear; the person did the task at least some of the time in more than one-third but less than two-thirds of the families studied.

This pattern of expected behavior was consistent with the established social definitions of women's and men's work in industrial societies. When the respondents were asked about their basis for dividing up the chores, more than 75 percent said in one way or another that it is obvious what the wife's role is and what the husband's is. Most families also made it clear that the sex of a child is the major factor, apart from age, in assigning specific chores to that child.

None of the correlations between overall measures of equipment possession and overall measures of work around the house exceeded .4, but several had probabilities of occurrence of less than .05, and the differences in the patterns of relationship for wives and husbands are of interest (table 3). For husbands there is a significant negative relationship between amount of equipment and number of tasks done exclusively, while this is not true for wives. There were no significant overall correlations with the measures of stereotypy. There are also significant negative correlations between family income and number of tasks done exclusively and amount of time spent in regular house-

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5 means does exclusively, 4 means does more than any one else, 3 does equally with someone else and no one else does more, 2 does some but someone else does more, 1 does not do at all. With this technique it is still possible to compute the same summary measures of participation, specialization, and stereotypy used by Blood and Wolfe. For more detailed accounts of how the present measures were constructed and of the relationship between the division of labor and factors other than household equipment, see the reports cited in n. 7 above.

work per week for husbands but not for wives. When income is held constant the relationships between equipment and time, and task performance are reduced below the point of significance (table 4). While this makes it impossible to argue that there is any simple relationship between overall level of equipment possession and husbands' participation in work around the house, it does appear that there is a complex of factors associated with higher incomes which includes, on the one hand, having more equipment and, on the other hand, less involvement in work around the house by husbands but not by wives. Analysis of the range of background and current activity variables included in the study did not reveal any positive clues as to other possible linking elements in this complex. While husbands in higher-income families do spend more time in connection with their jobs ( $r = .30$ ), the direct correlation of job time with housework time for men is not significant ( $r = -.13$ ).

It is also important to look at the relationship between specific items of equipment and directly associated tasks. There were fifteen combinations of an item of equipment and a task for which it was possible to test whether possession of the equipment was related to differences in the division of labor for the task. For each of these fifteen combinations a set of cross tabulations was computed, one table for each separate measure of task performance. Most of the resulting tables clearly

TABLE 3  
CORRELATIONS OF EXTENSIVENESS OF EQUIPMENT POSSESSION AND  
FAMILY INCOME WITH OVERALL MEASURES OF WORK DONE  
AROUND THE HOUSE BY HUSBANDS AND WIVES

	Items of Equipment (N)	Family Income
Husband:		
Total tasks (N) .....	-.297**	-.243*
Tasks done exclusively (N) .....	-.390**	-.420**
Nonstereotyped tasks (N) .....	.024	.166
Estimated weekly hours of work around the house .....	-.279*	-.366**
Family income .....	.552**	...
Wife:		
Total tasks (N) .....	.103	-.167
Tasks done exclusively (N) .....	-.152	-.057
Nonstereotyped tasks (N) .....	.034	-.049
Estimated weekly hours of work around the house .....	.108	.129

\* $P < .05$ .

\*\* $P \leq .01$ .

TABLE 4  
PARTIAL CORRELATIONS OF EXTENSIVENESS OF EQUIPMENT  
POSSESSION WITH OVERALL MEASURES OF WORK DONE  
AROUND THE HOUSE BY HUSBANDS  
(Family Income Held Constant)

	Items of Equipment (N)
Husband's total number of tasks .....	-.190
Husband's number of tasks done exclusively ....	-.210
Husband's estimated weekly hours of work around the house .....	-.099

showed no relationship between equipment and task performance, but a number did. In families which had a garbage disposal, husbands and young children were significantly less involved in taking care of the garbage and wives were more likely to do it exclusively. In families with a dishwasher, husbands were less likely to help occasionally with the dishes, but, contrary to what many respondents said when asked what they thought were effects of modern equipment, children did the same amount. For several other items of equipment the most striking relationship was between possessing the equipment and doing the associated tasks; families with floor polishers and sewing machines were more likely to polish floors and mend and sew; families with power lawn mowers were more likely to do their own mowing rather than hire others to do it.

It is possible that, in spite of the general lack of individually significant differences at the task level, there could still be trends in the direction of the differences. This possibility was tested for specialization and for stereotypy. Nine of the fifteen tasks were done on a more specialized basis (meaning that fewer people were involved on the average) in families which had the relevant equipment, while for six it was the other way around. When the averages are recomputed to include only those families in which the task is actually done by a member of the family as opposed to being done by an outside helper or not done at all, the results change slightly: now seven of the tasks were more specialized in families without the equipment. Clearly there is no trend here.

For stereotypy a different picture emerges. For ten of the tasks the average amount of nonstereotyped behavior was smaller in families with the equipment and for only three was it greater. (There was one tie and one task for which there was no definition of stereotyped

behavior.) The two-tailed probability,<sup>30</sup> .09, of getting a ratio of ten to three is low enough to suggest that modern household equipment of the type being studied here is being used to facilitate the carrying out of traditional patterns.<sup>31</sup> The individually significant differences in dishwashing and garbage disposal were also in this direction. Rather than break down the traditional role assignments, modern household equipment seems to reinforce them by making it easier for those who are stereotyped as doing particular tasks to do them without help from others. This is an important illustration of the point made at the beginning about the way new technology is often used.

An open-ended question at the end of the interview asked the respondents if they felt modern household equipment had affected the way their families divide up the work involved in the kind of everyday chores about which we had been asking. More than two-thirds of the couples said yes. When those who said yes were compared with those who said no, it turned out that they do in fact have more equipment and also, consistent with that, are of higher income and status. There were, however, no differences between the two groups on any of the overall measures of the division of labor.

Another open-ended question asked the parents if they thought that modern household equipment has affected the role of children in doing ordinary household chores. Most parents thought the overall effect was that children do less, twenty-eight families said it made no difference, and three said there was an increase in the amount done by children. About half of those who believe that children do less simply said that children's help is not needed as much with modern equipment. But it is also clear that different families react to equipment in directly opposite ways. Hence there were five families who said that a reason their children did less was that they did not want them involved with machinery, while six others said that machines make various tasks physically easier for children. At least two fathers mentioned power lawn mowers—one to say that they made mowing easier and his son could now mow the lawn at a younger age than he had been able to, the other to say that they are dangerous and he would not let his son operate one until the son was much older than

<sup>30</sup>Two-tailed because no prediction had been made originally about the expected direction of this result.

<sup>31</sup>Because the definitions of stereotyped behavior are derived from the overall patterns of the division of labor of the families in this study, we must show that the present result is not just a consequence of most families having most items of equipment. While for nine of the thirteen equipment-task combinations in question more than half of the families do own the equipment involved, there is no association between whether or not more than half the families own an item of equipment and the locus of the greater amount of nonstereotyped behavior.

he had been when he started using a hand mower. This is a very clear example of the role of values in mediating between the existence of a technology and its use.

Families who said that the effect of equipment was that children do less had more of the items in the equipment inventory than families who said that there is no effect, 16.0 compared with 15.1. Children in the "do less" families do not, however, spend any less time helping around the house, nor do they do fewer of the specific tasks included in the task performance record. This is another instance of a feeling among people who have more equipment that it should have some effect, though the effect was not detected by the measures used in this study. While it is certainly possible that there are real but unmeasured relationships, the case mentioned above of children and the dishwasher is instructive. In this very specific situation the impression of many respondents was not supported by the data. It is important to know that people who have modern equipment believe it has an impact on their family division of labor and to know what they think the impact is. It is also important to know whether these reported effects can be detected by standard measures of the family division of labor.

### *Summary and Conclusions*

The availability of modern household technology has increased the range of choices, at least at the societal level, for accomplishing basic subsistence tasks pertinent to cooking, cleaning, controlling the environment, and personal hygiene. Some previously available possibilities are closed to individual families by collective decisions—for example, backyard privies in urban areas. Lack of consumer demand can cause an outmoded product to become unavailable or more expensive to those few who might still want it. New products are for the most part designed and marketed to support the prevailing household family structure. However, no possibilities are eliminated merely by the *existence* of new technologies. Within a wide range, individual households do have the choice of whether or not to purchase particular equipment in the first place, and whether to use it to save time, increase standards, or change their division of labor if they do acquire it.

Far from the popular idea that the development of modern household technology has *caused* radical changes in traditional family arrangements, the examples presented here suggest that it has had conservative results because it has facilitated the maintenance of family patterns which might otherwise have been threatened by other changes outside the family. A good example of this is the relationship between the timesaving potential of modern equipment and the employment of women outside the home. As Oppenheimer showed,

there was nothing about the development of household equipment and products which forced women out of the home.<sup>32</sup> Yet the existence of timesaving equipment and products has allowed large numbers of women to combine paid employment and homemaking without the same threat to traditional family values that would have existed otherwise. Consistent with the point made earlier in this paper, Oppenheimer further suggests that recent improvements in equipment and products may as likely be the result of demands created by the increased number of working women as the other way around.

The relationship between equipment and the division of labor within the family was also a conservative one in light of the data presented here from my own research. When families have an item of equipment which is used for a particular task, they are likely to be more traditional in their division of labor for that task than are families that do not have the equipment.

There is no simple relationship between possession of equipment and children's help with household chores. It is not the case, on the average, that children in families with more equipment do fewer chores or spend any less time doing them. Nevertheless, even the fact that most parents *think* that modern equipment reduces the need for children's help allows fuller expression of their values in this area. Some parents made it very clear that they considered it important for children to do chores for training, character development, and sense of membership in the family. For these reasons some parents said they would assign chores when the actual labor contribution of the child was nil or even negative. Other parents said that with modern equipment they did not need their children's help as much and that the children had more important ways to spend their time.

Household technology does not differ from other forms of technology in its cause-and-effect relationships with the rest of human culture. Technology is used as a means to nontechnological ends. In most cases these ends can be expressed in terms of preexisting norms and values. While technological change most definitely does have unforeseen consequences and in the long run is associated with dramatic social transformations, on a small scale and in the short run the direct impact of technological change is very likely to be conservative, facilitating adherence to the existing norms and values. This article has demonstrated that effect with respect to a number of aspects of the relationship between household technology and the family in contemporary industrial society.

<sup>32</sup>Oppenheimer (n. 19 above), pp. 29–39.